

REMARKS

This application has been reviewed in light of the Office Action dated January 27, 2003. Claims 1-7 are pending in this application. Claims 1 and 5-7, which are the independent claims, have been amended to define still more clearly what Applicants regard as their invention, in terms that distinguish over the art of record. Favorable reconsideration is requested.

The Office Action rejected Claims 1-7 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The Examiner asserted in the Office Action that the recitation "when a judgment is made that the ink is present in said flow path and the ink is not normally supplied" was not described in the specification. Initially, Applicants note that the aforementioned recitation has been amended to read a "means for controlling or stopping the driving to said discharge energy generating element when a judgment is made that the ink is partially present in said flow path and the ink is not normally supplied based on the detection result of the ink supply state inside said liquid flow path." In addition, Applicants note that support in the specification for this recitation can be found at least from page 20, line 16 to page 27, line 6, which describes a valve protection sequence for preventing damage of the movable member by the repetition of the valve action in a state where the ink is not normally supplied inside the liquid flow path 7. In addition, more specifically, Applicants note that support in the specification for detecting whether the ink is present in the flow path can be found at least at page 23, lines 12-25, which states:

"Hence, by detecting the temperature inside the liquid flow path by the temperature sensor 13, it is possible to detect the existence and non-existence of the ink inside the liquid flow path [emphasis added]. According to the detection result by this temperature sensor 13, for example, when the

temperature sensor 13 detects an abnormal temperature rise in contrast to the time when the ink exists, the driving to the heat generating element 2 is controlled or stopped by the above-described control circuit 59 or an signal for informing an abnormality to the main body is outputted so that physical damages of the movable member due to repetition of the empty discharge is prevented and a head capable of always displaying a stable discharge efficiency can be provided."

Furthermore, support in the specification for ("... and the ink is not normally supplied") can at least be found from page 24, line 14, to page 25, line 2, which states:

"In the temperature data to be stored in the recording head, with a point of the time when the valve protection sequence is executed as a base point, an ascending temperature data at that point of the time and a discharge ratio of the recording head (a ratio of the discharge nozzle to the number of all nozzles of the recording head per unit hour) inside the printing data memory held on the recording apparatus at the same point of the time are counted and selectively stored in the memory inside the recording apparatus. *In this way, before the valve protection sequence is executed, it is possible to estimate the state of the ink being not normally supplied* [emphasis added] - Regarding a valve protection measure in this case, ink suction means of the recording head provided for the recording apparatus is used, and at a point of the time when the empty discharge is estimated, the ink suction is forced to be executed, thereby making it possible to prevent a dangerous factor (bubble) in advance, which is assumed to induce the empty discharge inside the recording head."

Applicants believe that the rejection under Section 112, first paragraph, has been obviated, and its withdrawal is therefore respectfully requested.

The Office Action rejected Claims 1-5 and 7 under 35 U.S.C. § 103(a) as being unpatentable over European Patent Application EP 0 920 999 A2 (Imanaka et al.) in view of U.S. Patent No. 5,992,984 (Imanaka et al.), and rejected Claim 6 as being unpatentable over European Patent Application EP 0 920 999 A2 (Imanaka et al.) in view of U.S. Patent No. 5,992,984 (Imanaka et al.) and further in view of U.S. Patent No. 5,886,713 (Okada et al.). Applicants respectfully traverse these rejections.

Applicants submit that amended independent Claims 1 and 5-7, together

with the remaining claims dependent thereon, are patentably distinct from the proposed combination of the cited prior art at least for the following reasons.

The aspect of the present invention set forth in Claim 1 is a liquid discharge apparatus that includes a liquid discharge head that includes: a discharge port for discharging liquid; a liquid flow path in communication with the discharge port, the liquid flow path having a bubble generating region for generating a bubble; a discharge energy generating element for generating thermal energy for generating the bubble in the liquid inside the bubble generating region; and a movable member facing the discharge energy generating element and spaced apart from the discharge energy generating element. An end portion of the movable member situated at an upstream side in the flow direction of the liquid inside the liquid flow path is fixed and a down stream end of the movable member is a free end. means for detecting an ink supply state inside said liquid flow path. The liquid discharge head of the apparatus also includes a means for controlling or stopping the driving to said discharge energy generating element when a judgment is made that the ink is partially present in the flow path and the ink is not normally supplied based on the detection result of the ink supply state inside the liquid flow path.

One important feature of Claim 1 is the means for controlling or stopping the driving to the discharge energy generating element when a judgment is made that the ink is partially present in the liquid flow path. With this feature, and the other features of Claim 1 as stated above, the excessive vibration of the movable member, which occurs during the driving of the heat generating member when ink is not present in the ink flow path, can be suppressed.

European Patent Application EP 0 920 999 A2 (Imanaka et al.) relates to a liquid ejecting head, head cartridge, and liquid ejecting apparatus. The Office Action states at page 4 (and Applicants agree) that the Imanaka et al. application “do[es] not disclose

that the judgment is made that the ink is present in said flow path and the ink is not normally supplied based on the detection result of the ink supply state inside said liquid flow path.” In addition, Applicants submit that nothing in the Imanaka et al. application discloses that the judgment is made that the ink is partially present in said flow path and the ink is not normally supplied based on the detection result of the ink supply state inside said liquid flow path.

U.S. Patent No. 5,992,984 (Imanaka et al.) relates to a liquid discharge head, head cartridge, and liquid discharge apparatus. The Office Action states that the Imanaka et al. patent discloses, among other things, that the “ink is present in said flow path . . .” and the Examiner asserted in the Office Action at page 4 that column 41, lines 30-40 of the specification provides support for this assertion, noting in the parenthesis that “. . . the lack of discharge of the recording ink means that the ink is present and is not normally supplied”. Applicants respectfully submit that this section of the specification relates to confirming the lack of discharge of the recording ink but such confirmation would not teach or suggest to a person of ordinary skill in the art a means for controlling or stopping the driving to the discharge energy generating element when a judgment is made that the ink is partially present in the liquid flow path, as recited in Claim 1.

Accordingly, Applicants submit that at least for this reason, Claim 1 is patentable over the cited prior art.

Independent Claims 5 and 7 include the same feature of controlling or stopping the driving to the discharge energy generating element when a judgment is made that the ink is partially present in the liquid flow path, as discussed above in connection with Claim 1. In addition, Claim 6 also includes the same feature of controlling or stopping the driving to the discharge energy generating element when a judgment is made that the ink is partially present in the liquid flow path, as discussed above in connection

with Claim 1, and nothing in Okada et al., or in the Office Action, has been found by Applicants that would teach or suggest this feature. Accordingly, at least for this reason, Claims 5-7 are believed to be patentable for at least the same reasons as discussed above in connection with Claim 1.

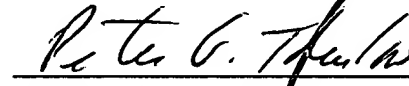
The other rejected claims in this application depend from Claim 1 discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

This Amendment After Final Action is believed to place this application in condition for allowance and, therefore, its entry is believed proper under 37 C.F.R. § 1.116. Accordingly, entry of this Amendment After Final Action, as an earnest effort to advance prosecution and reduce the number of issues, is respectfully requested. Should the Examiner believe that issues remain outstanding, it is respectfully requested that the Examiner contact Applicants' undersigned attorney in an effort to resolve such issues and advance the case to issue.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,



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[Home](#)[Index](#)[Search](#)[System Alerts](#)[eBusiness Center](#)[News & Notices](#)[Contact Us](#)**Amendments in a Revised Format Now Permitted**

Office of Patent Legal Administration << Pre-OG Notices << << Amendments in a Revised Format Now Permitted

The United States Patent and Trademark Office (USPTO or Office) is permitting applicants to submit amendments in a revised format as set forth herein. The revised amendment format is essentially the same as the amendment format that the Office is considering adopting via a revision to 37 CFR 1.121 (Manner of Making Amendments). The revision to 37 CFR 1.121 (if adopted) will simplify amendment submission and improve file management. The Office plans to adopt such a revision to 37 CFR 1.121 by July of 2003, at which point compliance with revised 37 CFR 1.121 will be mandatory.

The revised amendment format is an expansion of the special amendment process instituted for a prototype Electronic File Wrapper program described in USPTO ANNOUNCES PROTOTYPE OF IMAGE PROCESSING, 1265 Off. Gaz. Pat. Office 87 (Dec. 17, 2002) ("Prototype Announcement"). The special amendment process (which was limited to claims) has proven overwhelmingly acceptable to applicants participating in the prototype and beneficial to examiners. The revised amendment format provides for amendments to be made to the specification and the drawings in addition to the claims.

Effective immediately, **all** applicants, including applicants participating in the prototype, may submit amendments using the revised amendment format set forth herein. Applicants may wish to submit all amendments in the revised amendment format because: (1) it will facilitate transition to a revised amendment format when it becomes mandatory, (2) inconsistent versions of claim amendments (clean and marked-up) will be avoided, and (3) time and resources will be saved.

WAIVER of 37 CFR 1.121

The provisions of 37 CFR 1.121(a), (b), (c) and (d) are waived for amendments to the **claims, specification, and drawings** in all applications in all Technology Centers where the amendments comply with the revised amendment format detailed below. Note: The revised amendment format (and the waiver) does **not** apply to 37 CFR 1.121(h) and (i) which indicate that amendments to reissue applications and reexamination proceedings are governed by 37 CFR 1.173 for reissue applications and 37 CFR 1.530 (d)-(k) for *ex parte* and *inter partes* reexaminations.

In addition, the WAIVER indicated in the above mentioned Prototype Announcement for the limited (claims only) amendment process of that prototype is also expressly continued and amendments in applications (other than reissue applications) in all Technology Centers that comply with the requirements in that announcement will be acceptable.

REVISED AMENDMENT FORMAT**I. Begin Sections on Separate Sheets:**

Each section of an amendment paper (e.g., Amendments to the Specification, Amendments to the Claims, Remarks) shall begin on a separate sheet to facilitate separate indexing and electronic scanning of the document.

For example, each of the following four sections of an amendment paper must start on a separate sheet:

- a.) Introductory Comments

- b.) Amendments to the Specification
- c.) Amendments to the Claims
- d.) Remarks

II. Submit Only One Version (with markings) of an Amended Part:

The requirement to provide two versions of a replacement paragraph, section, or claim (a clean version and a marked up version), as set forth in current 37 CFR 1.121, is waived where the format set forth below is followed.

III. Amendments to the Claims

A. A Complete Listing of Claims is Always Required:

If an amendment adds, changes or deletes any claim, a detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remains under examination in the application, must be presented, and the amendment to the claims is expressed in the listing. The listing shall be presented as follows:

1. Ascending Order and Status Identifier Required

The listing shall be provided in sequential ascending numerical order (beginning with claim 1). A status identifier shall be provided for every claim in a parenthetical expression following the claim number (e.g., "Claim 1. (original)"). A list of acceptable status identifiers is set forth in part B, below. The text of **all** claims under examination shall be submitted each time any claim is amended. Cancelled and withdrawn claims should be indicated by only the claim number and status. The text of cancelled or withdrawn claims should not be presented.

2. Markings in Currently Amended Claims Required

All claims *being currently amended* shall be submitted with markings to indicate the changes that have been made relative to the immediate prior version of the claims. The changes in any amended claim should be shown by strikethrough (for deleted matter) or underlining (for added matter). No separate "clean" version should be submitted for currently amended claims, as this requirement has been eliminated. **Markings should only be made in claims being currently amended in an amendment paper.**

3. Only Clean Text Required for Other Claims Under Examination.

The text of pending claims *not being currently amended* that are under examination shall be presented in a clean version in the listing. Any claim presented in clean version constitutes an assertion that it has not been changed relative to the immediate prior version.

4. Status to Effect Claim Cancellation or Addition.

A claim may be cancelled by merely indicating the status of the claim as cancelled. Any new claim added by amendment must be indicated by the appropriate status identifier and shall not be underlined. Thus, added new claims of status (new), (reinstated - formerly claim #_) and (re-presented - formerly dependent claim #_) must be presented in clean version. Additional claims may be subject to additional fees, as appropriate.

5. When Grouping of Claims is Permitted.

Consecutive cancelled or withdrawn claims may be aggregated into one line of the listing (e.g. Claims 1 - 5 (cancelled)).

6. Use "Currently Amended" Status Where Applicable.

If any "previously reinstated" or "previously re-presented" claim is being amended, the status shall be indicated as "currently amended" with markings as indicated in paragraph A2, above. Multiple status identifiers should not be used for any single claim.

B. Status Identifiers that May be Used:

In order to promote uniformity and consistency, only the following eleven (11) defined status identifiers should be used to indicate the status of the claims (in parentheses after the claim number):

- | | |
|--|---|
| 1. (Original): | Claim filed with the application following the specification (i.e., not added by preliminary amendment). |
| 2. (Currently amended): | Claim being amended in the current amendment paper. |
| 3. (Previously amended): | Claim not being currently amended, but which was amended in a previous amendment paper. |
| 4. (Cancelled): | Claim cancelled or deleted from the application. |
| 5. (Withdrawn): | Claim still in the application, but in a non-elected status. |
| 6. (Previously added): | Claim added in an earlier amendment paper. |
| 7. (New): | Claim being added in the current amendment paper. |
| 8. (Reinstated - formerly claim # _): | Claim deleted in an earlier amendment paper, but re-presented with a new claim number in current amendment. |
| 9. (Previously reinstated): | Claim deleted in an earlier amendment and reinstated in an earlier amendment paper. |
| 10. (Re-presented - formerly dependent claim # _): | Dependent claim re-presented in independent form in current amendment paper. |
| 11. (Previously re-presented): | Dependent claim re-presented in independent form in an earlier amendment, but not currently amended. |

C. Example of Listing of Claims:

Claims 1-5 (cancelled)
 Claim 6 (withdrawn)
 Claim 7 (previously amended): A bucket with a handle.
 Claim 8 (currently amended): A bucket with a ~~green~~ blue handle.
 Claim 9 (withdrawn)
 Claim 10 (original): A bucket with a wooden handle.
 Claim 11 (cancelled)

Claim 12 (new): A bucket with plastic sides and bottom.

Claim 13 (previously added): A bucket having a circumferential upper lip.

Claim 14 (re-presented - formerly claim 11): A black bucket with a wooden handle.

IV. Amendments to the Specification

Amendments to the specification are to be made by presenting replacement paragraphs, sections or a substitute specification marked up to show changes made relative to the immediate prior version, as set out in 37 CFR 1.121(b). The changes should be shown by strikethrough (for deleted matter) or underlining (for added matter). No accompanying "clean" version shall be supplied. The amendments to the specification shall be presented only one time, and will not appear in successive amendment documents.

V. Amendments to the Drawings

Amendments to the drawing figures shall be made by presenting replacement figures which include the desired changes, without markings, and which comply with § 1.84. The changes shall be explained in the accompanying remarks section of the amendment paper. If the amended drawings are not approved, the applicant will be notified in the next Office action. Any amended drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even though only one figure may be amended. The figure number in the amended drawing should not be labeled as "amended."

For further information on the prototype image electronic processing of patent applications, please contact the Search and Information Resources Administration at: **image.processing@uspto.gov**. Any questions regarding the submission of amendments pursuant to the revised practice set forth in this notice should be directed to Elizabeth Dougherty (**Elizabeth.Dougherty@uspto.gov**), Gena Jones (**Eugenia.Jones@uspto.gov**) or Joe Narcavage (mailto:**Joseph.Narcavage@uspto.gov**). For information on the waiver or legal aspects of the program, please contact Jay Lucas (**Jay.Lucas@uspto.gov**) or Rob Clarke (**Robert.Clarke@uspto.gov**).

Date: 1/31/03

Signed: /s/
STEPHEN KUNIN
Deputy Commissioner for Patent
Examination Policy

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